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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,831	12/16/2003	Ming-Theng Wang	FP9926	5458
52981	7590	09/07/2006	EXAMINER LANG, AMY T	
LEONG C LEI PMB # 1008 1867 YGNACIO VALLEY ROAD WALNUT CREEK, CA 94598			ART UNIT 1714	PAPER NUMBER

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/735,831	<b>Applicant(s)</b> WANG, MING-THENG	
	<b>Examiner</b> Amy T. Lang	<b>Art Unit</b> 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 2,4,5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 2 and 4 are objected to because of the following informalities: Claims 1 and 5 disclose the nanometered graphite with a diameter of 100~200 nanometers.

However, it is the examiner's position that the symbol "~" is unclear in context.

Appropriate correction is required.

2. Claims 2, 4, and 5 are objected to because of the following informalities: Claims 2, 4, and 5 contain the phrase "diameter within about." However, it is the examiner's position that the term "within" is unclear in context since the scope of the term is not understood. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang (US 20040209782 A1).

Zhang discloses a composition comprising carbon nanomaterials dispersed in a liquid fluid medium ([0004]). The preferred carbon nanomaterial is disclosed as graphite with a mean particle size less than 200 nm, which clearly overlaps the instantly claimed diameter of 100-200 nanometers ([0023]). The liquid medium is further disclosed as various lubricating oils ([0030] – [0048]). The nanometered graphite disclosed by Zhang is present in the liquid medium at 20 wt%, which clearly overlaps the instantly claimed one part nanometered graphite and four parts lubricating oil ([0024]).

Therefore, Zhang '782 anticipates the cited present claims.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2004/0209782 A1) in view of Luk (US 5,782,954) and Asao (US 6,944,930B2).

Zhang, as discussed in paragraph 4 and incorporated here by reference, discloses a lubricating composition comprised of lubricating oil as a liquid medium and dispersed nanometered graphite. The lubricating oil is disclosed as various oils, including a mixture of synthetic oils or minerals oils with hydrogenated oil ([0045]). The mixture comprises up to 100% hydrogenated oil. One specific synthetic oil is comprised of diesters, which provide outstanding flow properties ([0041]).

Zhang does not disclose the addition of a lubricating oil comprising ferric oxide or silicon oxide.

Luk discloses a lubricating composition that provides superior flow properties due to oxide flow agents (column 1, lines 56-58; column 7, lines 16-20, 29-31). The flow agents include the combination of silicon oxides and iron oxides (column 2, lines 2-18). The silicon oxides are present in the composition from 0.005 to 2 wt% and have an average particle size below about 40 nanometers (column 6, lines 5-20). The iron oxides are present in the composition from 0.01 to 2 wt% and have an average particle size between 25 and 300 nanometers (column 6, lines 34-50). Therefore, both the silicon oxides and iron oxides are present in the composition in overlapping wt% ranges and both comprise nanometered compounds. Furthermore, the iron oxide is preferably disclosed as ferric oxide (column 6, line 50).

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Luk does not disclose the lubricant in the lubricating composition as lubricating oil, but instead as a synthetic wax (column 6, lines 57-62; column 7, lines 39-41).

Asao discloses that lubricating oils encompass wax, so that Luk intrinsically discloses oil by disclosing a wax. Therefore, Luk discloses a synthetic lubricating oil.

Since Luk discloses a synthetic lubricating oil with superior flow properties and Zhang discloses a mixture of lubricating oils, one of which, a synthetic oil, is disclosed as having outstanding flow properties, it would have been obvious for Zhang to utilize this oil in the lubricating composition. Therefore, the combination of Zhang and Luk disclose a composition comprising hydrogenated oil with graphite nanomaterials and synthetic oil with ferric oxide and silicon oxide nanomaterials. Since Zhang discloses the mixture of hydrogenated and synthetic oils in amounts such that the hydrogenated oil comprises up to 100% of the mixture, it would have been obvious to combine 90% hydrogenated oil and 10% synthetic oil.

Furthermore, Zhang discloses the hydrogenated oil with a viscosity range of 2 to 60 cSt at 100 degrees Celsius ([0044]). Viscosity index improvers are also included in the composition as additives ([0062]). Therefore, it is the examiner's position that Zhang discloses a standard viscosity lubricating oil. Although Luk does not disclose the viscosity range of the synthetic lubricating oil, it is the examiner's position that any value would suffice as the broadly claimed low viscosity lubricating oil, so that it would have been obvious for Luk to disclose a viscosity that met this criteria.

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maeda (JP 2004-315762) discloses a lubricant composition comprised of nanometered graphite.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy T. Lang whose telephone number is 571-272-9057. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ATZ  
8/30/06

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